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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,898	09/24/2003	Cyril Cabral JR.	YOR920030469US1	2246
7590	10/20/2005			
Moser, Patterson & Sheridan Suite 100 595 Shrewsbury Avenue Shrewsbury, NJ 07702			EXAMINER WILSON, CHRISTIAN D	
			ART UNIT 2891	PAPER NUMBER

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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# **Office Action Summary**

Application No.

10/669,898

Applicant(s)

CABRAL ET AL.

Examiner

Christian Wilson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## **Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## **Status**

- 1) ☒ Responsive to communication(s) filed on 29 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## **Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## **Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## **Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## **Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 – 3, 5, 6, 9, 10, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by Maszara *et al.*

Maszara *et al.* (US 6,599,831) discloses a method of fabricating a transistor **30** by providing a substrate **32**, providing a polysilicon layer **36** formed on a gate dielectric **34**, doping **50** the polysilicon layer, forming a polysilicon gate electrode [Figures 7 & 8], depositing a metal layer **60**, siliciding the gate electrode to form a silicide **62** and a monolayer **68** of the dopant at an interface between the gate dielectric and the silicide.

Regarding claim 2, Maszara *et al.* further discloses doping after the forming step [Figure 2].

Regarding claims 3, 5, and 6, Maszara *et al.* further discloses doping with As or B with an ion implantation process with a dose of  $1 \times 10^{14}$  to  $4 \times 10^{15}$  ions/cm<sup>2</sup> [column 3, lines 10-20].

Regarding claims 9 and 10, Maszara *et al.* further discloses using Ni [column 3, line 45].

Regarding claim 13, Maszara *et al.* further discloses siliciding using an annealing process [column 3, lines 30-35].

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4 is are rejected under 35 U.S.C. 103(a) as being unpatentable over Maszara *et al.* in view of Buynoski.

Regarding claim 4, Maszara *et al.* teaches using B or As as a dopant, but not Sb. Buynoski (US 6,518,113) teaches B, As, P, or Sb as a dopant [column 12, lines 1-10]. It would have been obvious to one of ordinary skill in the art to use Sb as a dopant since Buynoski teaches that Sb is an equivalent material choice and therefore is well known as a substitute for B or As.

5. Claims 7, 8, 11, 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maszara *et al.* in view of Chong *et al.*

Regarding claims 7 and 8, Maszara *et al.* does not discuss amorphizing the gate electrode. Chong *et al.* (6,624,489) teaches amorphizing the polysilicon gate electrode by ion implanting Si or Ge [column 4, lines 50-60]. It would have been obvious to one of ordinary skill in the art to amorphize the gate electrode since Chong *et al.* teaches that this process breaks the lattice bonds of the silicon surface and reduces the temperature needed for annealing.

Regarding claims 11 – 12, Maszara *et al.* teaches Ni, but does not discuss Co or an alloy of Ni. Chong *et al.* teaches a metal of Ni or Co and an alloy of Pt [column 4, line 65]. It would have been obvious to one of ordinary skill in the art to use the materials of Chong *et al.* in the

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method of Maszara *et al.* since Chong *et al.* teaches that Co or Ni-Pt is well known material choice for forming silicide layers with the same properties and function as Ni.

Regarding claim 14, Maszara *et al.* further teaches a rapid thermal annealing process performed at 500° C, but does not discuss the annealing time. Chong *et al.* teaches a siliciding process of annealing between 250° C and 900° C for 5 sec to 1 hr [column 6, lines 22-23]. It would have been obvious to one of ordinary skill in the art to use an annealing time of 0.3 to 30 min in the process of Maszara *et al.* since Chong *et al.* teaches that this annealing time is sufficient to use all of the metal layer which is necessary to the Maszara *et al.* process [column 4, lines 25-35].

### ***Response to Arguments***

6. Applicant's arguments filed September 1, 2005 have been fully considered but they are not persuasive.

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new grounds of rejection.

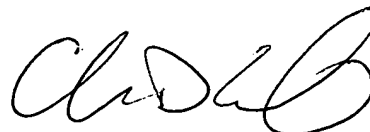
### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian Wilson whose telephone number is (571) 272-1886. The examiner can normally be reached on weekdays, 7:30 AM to 4 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571) 272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'CDW', is positioned above the printed name of the examiner.

Christian Wilson, Ph.D.  
Primary Examiner  
Art Unit 2891

CDW